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SILVICAL LEAFLET 24.

BRISTLE-CONE FIR.

Abies venusta (Dougl.) Koch.

Although limited in distribution, bristle-cone fir forms with other species a valuable protective forest on the slopes and in the canyons of the Santa Lucia Mountains. It is particularly important on the barren upper slopes, where few other species will subsist.

RANGE AND OCCURRENCE.

It occurs in the central California coast region in Monterey County, and on both the eastern and western slopes of the Santa Lucia Mountains from Uncle Sam Mountain south to Mount Mars. In elevation it ranges from 2,200 feet to more than 5,600 feet.

Bristle-cone fir is found in only a few scattered groves, none of them exceeding 200 trees in number. Most of the groves are isolated in cool and moist canyon bottoms with northern or western exposures, between elevations of 3,000 and 5,600 feet above sea level. The trees are largest on western slopes in deep ravines opening toward the sea. Stunted specimens are found in the most exposed and coldest places on ridges and the highest peaks.

CLIMATE.

In protected localities in the Santa Lucia Mountains, where bristle-cone fir reaches its best development, the temperature seldom falls to zero or rises much above 100° F. On the exposed crests of ridges the seasonal range of temperature is somewhat greater. Moisture-laden west winds maintain a fairly high degree of atmospheric humidity during most of the year. The annual precipitation, which consists almost entirely of rain, varies between 20 and 50 inches. The snowfall is light even at high altitudes.

ASSOCIATED SPECIES.

In small, pure groups or as isolated trees bristle-cone fir is commonly associated with canyon live oak, Oregon maple, California laurel, white alder, and madroña, and less frequently with Coulter pine, sugar pine, Douglas fir, tanbark oak, and highland oak.

HABIT.

Bristle-cone fir is a medium-sized tree. Even in the deep, moist canyons where it grows best it is only 1 or 2 feet in diameter and from 100 to 150 feet high. It has a spike-like crown with a swelling outline toward the base, abruptly contracted near the ground. The trunk is straight, limby, and tapers rapidly.

SOIL AND MOISTURE.

The canyons which bristle-cone fir inhabits are moist during most of the year, but frequently become completely dry during the summer. In the localities where it makes its best growth the soil is usually porous and fairly deep, but near its upper altitudinal limit the tree often grows in shallow beds of coarse rock fragments.

TOLERANCE.

Bristle-cone fir is tolerant throughout life, and particularly so in early youth. It will bear dense side shade, and retains vigorous lower branches even in close stands.

REPRODUCTION.

It is a moderately prolific seeder, with seed years at from three to five years. The seeds have comparatively low powers of germination and their vitality is transient. Exposed, moist, mineral soil appears to be the most favorable seed bed. Seedling reproduction is fairly good throughout the range of the species.

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